

1989

ACCOMPLISHMENTS

FOR THE

CIGARETTE TESTING

SERVICES DIVISION

2022199411

1989

ACCOMPLISHMENTS

FOR THE

ANALYTICAL CHEMISTRY SECTION

2022199412

PHILIP MORRIS U. S. A.

INTER-OFFICE CORRESPONDENCE

Richmond, Virginia

To: . Mr. J. E. Wickham

Date: January 26, 1990

From: . Jane Y. Lewis

Subject: . Accomplishments for the Analytical Chemistry Section - 1989

The accomplishments for the Analytical Chemistry Section are summarized below. Individual accomplishments for the professional staff are attached.

I. REPLACEMENT OF GAS CHROMATOGRAPHS IN THE NICOTINE AND WATER LABORATORY

A. Gas Chromatographs (J. Sampson, R. Forte)

Two Hewlett Packard 5890A capillary gas chromatographs for nicotine and water analysis were installed. These instruments are equipped with a 15-meter x 0.25 mm ID x 0.25 micron film thickness Stabilwax-DB capillary column for nicotine analysis and Poropak QS packed column for water analysis. An HP 5895A ChemStation provides the needed instrument and autosampler control as well as data collection and analysis. Investigation is currently underway with CAD to determine the best hardware and software configuration for the data acquisition system. (Memo from J. Sampson, "Proposed Systems for Nicotine and Water Laboratory," 4/10/89).

B. Sample Transfer Station (J. Sampson)

With the new Hewlett Packard gas chromatographs, there is a need to transfer TPM extraction solution from test tubes to autosampler vials for nicotine and water analysis. A Gilson Sample Changer was tested for this purpose and was proven to be very efficient in the transfer operation. The Gilson programs were modified to ensure no cross-contamination between samples.

This unit was also tested for the operation of filling test tubes with extraction solution. The operation is somewhat slower than the old Filamatic unit, but is more accurate in the volume dispensed and much more versatile in terms of dispensing different volumes. Having the ability to easily change volumes is advantageous when measuring ultra low delivery cigarettes or when nicotine/water analyses must be performed on a single port basis.

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II. SPECIAL SMOKING LABORATORY

A. Filtrona 20-port CO Smoking Machine (B. Joyner)

The Filtrona machine was installed to increase capacity for generating CO delivery in cigarettes. Data collected from CI brands as well as monitor cigarettes proved to be statistically not different from data generated on the Phipps & Bird machine. This work was summarized in a CTSD Project Review, 3/19/89 and in a memo entitled "Evaluation of Filtrona CO Smoking Machine," 6/2/89 by B. Joyner.

B. Air Handling System

A Liebert air handling system was installed for the purposes of obtaining ISO conditions (72°F, 60% RH) in this laboratory. These conditions are required for the testing of some international brands. The Liebert system also ensures consistent maintenance of FTC conditions (75°F, 60% RH). (Memo to J. E. Wickham from J. Sampson, "ISO Conditions - L-4217," 6/15/89.)

C. New 5-Port Smoking Machine (B. Joyner, J. Sampson)

The prototype system including new 5-port smoking machine and PC based data acquisition system were installed. Results from monitor cigarettes for TPM, puff count, CO and NO delivery are within specifications. The TPM values from each port were plotted on control charts to show that there was no bias from port-to-port. This machine has been put into routine operation.

D. Cyanide Delivery (J. Sampson)

The level of total cyanides in Monitor #25 cigarettes were below specifications. Attempts to bring delivery within specification included investigation of air flows, smoking machine operation, quality of house air and water, efficiency of transfer from gas phase to aqueous phase and operation and performance of the autoanalyzer used for detection. Bill Harvey, Cindi Bright, and Becky Kanipe were consulted for their expertise in this area. Efforts thus far have failed to correct the situation. The installation of the new air handling system which provides a very consistent supply of conditioned air may effect a difference. (Memo from J. Sampson, "Gas Phase Laboratory," 6/9/89. Memo from B. Kanipe, "Troubleshooting Summary of Hydrogen Cyanide in Gas Phase," 11/16/89.)

E. Carbon Filtered Cigarettes (J. Sampson)

Smoke Index data were generated for carbon filtered cigarettes with and without the ventilation holes taped to see if small differences in delivery could be magnified. This work was proposed in a memo to J. E. Wickham from J. Y. Lewis entitled "Gas Phase Methodology for Comparing Plasticizers in Carbon Filters," 6/1/89. The data showed that trends between taped and untaped cigarettes were consistent and that the taped experiment offered

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no additional information. These results were summarized in a CTSD Project Review by J. Sampson, 12/7/89.

III. ALKALOID REDUCED TOBACCO CIGARETTES

A. U.S. Testing Certification (R. Forte)

It was requested of U.S. Testing Company, Inc., to certify the capillary gas chromatographic method for quantifying low levels of nicotine in smoke for ART cigarettes. Cigarettes at the level of 0.04 and 0.07 mg nicotine were analyzed as is, and with small known quantities of nicotine added. Recoveries averaged 96-107% for the spiked additions. An extraction study proved an 1-hour extraction time to be sufficient. This method was certified in a report by Boyd Fagan of U.S. Testing entitled "An Improved Technique for Accurate Measurement of Low-Level Nicotine Delivery in Cigarette Smoke," 9/13/89.

B. Wide Bore vs. Capillary Chromatography (J. Sampson)

Objective: To evaluate capillary versus wide-bore columns for nicotine analysis on ART smoke samples.

Status: A study was completed which showed excellent agreement between a 15-meter x 0.25 mm ID x 0.25 micron film thickness Stabilwax-DB capillary column and a 15-meter x 0.53 mm ID x 1.00 micron film thickness Stabilwax-DB wide-bore column. The wide-bore column was installed in an HP5880A packed column GC using HP injector port adapters and glass liners. A 5-meter fused silica guard column was installed before the analytical column which allowed the analysis time to be reduced from 40 to 20 minutes per sample. Although all ART smoke samples are currently being analyzed on a capillary GC, if a capillary GC is not available, nicotine can be analyzed on a packed column GC equipped with wide-bore columns. This work was discussed in a CTSD Project Meeting by J. Sampson, 3/28/89 and in a memo from J. Sampson entitled "Nicotine Analysis," 3/13/89. The wide bore methodology was documented in a completion report entitled "Determination of Nicotine in Smoke for Alkaloid Reduced Tobacco," by J. Y. Lewis, R. A. Forte and J. A. Sampson, Accession No. 89-036, 7/21/89.

C. Quality Assurance (J. Sampson)

A Hewlett Packard 5880 gas chromatograph was set-up in QA Product Audit for the analysis of nicotine in ART products. The column used was a 15-meter x 0.25 mm ID Stabilwax-DB capillary column. (Memo from J. Sampson, "Capillary Gas Chromatograph for QA," 3/9/89.)

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IV. ROBOTIC DISPENSING SYSTEM (R. Forte)

The robotic system was designed and built by Hudson Robotics, Inc. to meet our detailed criteria for operating and safety features. The system dispenses ethanolic extraction solvent onto samples for the analyses of menthol, humectants and plasticizers. The system can accommodate both the test tubes and Erlenmeyer-type disposable flasks that are used in this laboratory. It can be programmed to process a large number of samples with several different volumes of extraction solution. An extensive set of safety features were incorporated in order to obtain Factory Mutual's approval (PM's fire insurance carrier). This work was documented in a completion report entitled "Laboratory Robotic Dispensing System," by R. A. Forte, R. W. Kanipe and J. Y. Lewis, Accession No. 89-042, 6/6/89. It was also presented at TCRC by R. A. Forte, Richmond, Virginia, 10/4/89.

V. PEAK COAL TEMPERATURE (B. Joyner)

A thermographic image analysis system was purchased from Agema Infrared to measure the peak coal temperature of a burning cigarette. This was replacement of a 20-year old AGA system that had become inoperative. Customized software was provided by Agema so that data could be captured automatically from ten cigarettes being smoked on a rotary-type smoking machine. The peak coal temperature data are reported on a per puff and per cigarette basis. The system is fully automated and designed for high volume usage.

Data from monitor cigarettes are comparable to that produced on the AGA system. The Agema system has many features and advantages that were not available in the past. An overview of the system was presented by B. Joyner and D. Lisbon at the CTSD Project Review, 12/7/89.

VI. MENTHOL/HUMECTANTS (J. Sampson)

The HP 5880 gas chromatograph used for menthol in filler, and humectants in smoke and filler was modified to improve efficiency. The analysis is performed on a 30-meter x 0.53 mm ID DB-WAX wide-bore column with an analysis time of 45 minutes per sample. The installation of a five-meter x 0.53 mm ID fused silica guard column before the analytical column resulted in a decrease in analysis time to 25 minutes per sample. (Memo from J. Sampson, "Humectants Analysis," 4/18/89.)

VII. ANETHOLE ANALYSIS IN FILLER AND AFTERCUT (R. Forte)

A dual distillation apparatus was assembled and put into operation for extracting anethole. The required capillary gas chromatograph is being installed. In the meantime, sample preparation is being done in CTSD with chromatographic analysis in Flavor Development. Following collaborative efforts between the two laboratories, CTSD will accept full responsibility for quantifying trace level (1-5 ppm) anethole in filler and aftercut was transferred from Flavor Development to CTSD.

VIII. CITRATES IN PAPER BY ION CHROMATOGRAPHY (B. Joyner)

An ion chromatographic procedure as replacement for gas chromatography was adapted for CTSD's use by Garland Carter. The ion chromatographic procedure eliminates the use of chloroform as an extraction solvent. The method was then transferred to the Analytical Chemistry Section. One remaining chemical interference needs to be investigated before the method can be put into routine use.

IX. DIN METHODOLOGY (R. Forte)

A procedure was developed for quantifying nicotine and water in TPM of samples smoked according to the DIN procedure. TPM was received in an electrostatic precipitation tube from the Borgwaldt smoking machine. Several samples were analyzed to establish a correlation of tar and nicotine between the DIN and FTC methodologies.

X. REPORTS

- A. "Humectants and Plasticizer Levels of Commercial Cigarettes - 1988," memo to J. E. Wickham from R. A. Forte, 3/31/89.
- B. Annual Freon® Survey, reported by B. Joyner in CTSD August, 1989 monthly report, 8/89.

XI. TRAINING

B. Joyner and J. Sampson spent time in September, 1989 training Mr. Yap Swee Chye, chemist for the Department of Scientific Services in Singapore. His training within the Analytical Chemistry Section included operation and maintenance of the Filtrona 20-port smoking machine and Hewlett Packard 5890 gas chromatograph. He was also trained in the preparation of nicotine and water standards and in data evaluation.

XII. MEETINGS

- A. IRI Management Study Group, Baltimore, MD, 1/9-11/89.
- B. Pittsburgh Conference, Atlanta, GA, 3/6-10/89.
- C. International Conferences on Fourier Transform Spectroscopy, Fairfax, VA, 6/19-21/89.
- D. TCRC, Richmond, VA, 10/3-4/89.
- E. Priority Management, in-house, 11/16/89.

JYL:rad

Jane Lewis/DE

2022199417

PHILIP MORRIS U. S. A.

INTER - OFFICE CORRESPONDENCE

Richmond, Virginia

To: . Dr. Jane Y. Lewis
From: . Robert A. Forte
Subject: . Accomplishments for 1989

Date: January 9, 1990

I. CROSS-TRAINING

Objective: To become familiar with the people, instrumentation, and capabilities of the Analytical Research Division (ARD).

Results: During the week of June 12, I spent time at ARD meeting with the Manager, Section Leaders, and Project Leaders. I was shown, in an overview fashion, the operation of ARD and their capabilities.

II. METHODS DEVELOPMENT AND IMPROVEMENT

A. Anethole Analysis

Objective: To set-up the anethole analysis of filler and after-cut solution according to the methods developed by Flavor Development.

Status: All of the equipment necessary to perform this analysis arrived. Modifications to the laboratory were completed. The circulating chiller was installed with two rotometers to maintain equal flow to both stills. Two stills were assembled and are operational. We are now capable of performing the extraction of anethole on filler and have been doing so since the beginning of December. The gas chromatograph arrived the last week in December and will be installed soon. Meanwhile, the GC work will be done using Flavor Development's GC. Jeanie Myers (laboratory technician) and I were trained by Dr. Barbu Demian, the author of this method. Ms. Myers is currently handling the anethole in filler analysis.

B. Robotic System

Objective: To have an operating robotic system in place to perform the solvent dispensing operation in the GC Laboratory.

Status: The robotic system was installed by Hudson Robotics, Incorporated, (robot vendor and system designer) during the week of March 13 and was operational by week-end. Initially some problems surfaced but were corrected by the vendor. Since that time, the robotic system functioned satisfactorily. This robotic dispensing system is in routine operation and used daily. This

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system incorporates a comprehensive set of in-house designed safety features which allow it to dispense ethanol in a safe manner. Because of these safety features, this system carries Factory Mutual's (PM's fire insurance carrier) approval. This is the first robotic system at Philip Morris that handles a flammable liquid. After several months of operation, several enhancements were incorporated into the system software to improve the robot's performance. The robotic approach command was modified to increase the vessel pick-up accuracy. The vessel transport carriage motion was also improved by a software routine. Finally, the robotic arm was directed to a safe point after a set of samples is completed. This safeguard prevents the robotic arm from striking any obstacles when running the next set of samples. Since this system is flexible, upgrades will be made as needed. Personnel in the GC Laboratory were trained to operate the robotic system and each technician is trained as they rotate into the GC Laboratory. To date, approximately 60% of the laboratory personnel have been trained.

C. Update Gas Chromatographs

Objective: To formulate a plan for updating the gas chromatographic instrumentation, instrument control, and intra-laboratory processing in the GC and Nicotine/Water Laboratories.

Status: The problem was evaluated and with Jeff Sampson's assistance, a plan was formulated. After evaluating GCs and intra-laboratory processing devices from several vendors, Hewlett Packard (HP) was selected to supply both components to form an integral system. The GC selected was the HP5890 Series II GC with dual autosamplers (HP7673A). The intra-laboratory processor will be an HP3365 data system. A timetable was formulated to determine when each GC will be replaced.

III. TECHNICAL SUPPORT

A. Electrostatic Precipitation Tubes

Objective: To develop a technique to handle nicotine and water analyses using the electrostatic precipitation tubes from the DIN smoking procedure.

Status: A procedure was developed to add solvent, perform the extraction, and perform the nicotine and water analysis on smoke samples from electrostatic precipitation tubes (DIN method). The initial work was done using Monitor #25 smoke runs. The technique was refined to minimize atmospheric water contamination. A blank (unsmoked, clean tube) was analyzed daily to correct for any residual water and any atmospheric contamination due to technique. Consistency was established with these monitor runs. Several cigarette brands with different deliveries were smoked by the DIN method to establish a comparison between the nicotine and tar values generated from this method and from the FTC method.

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B. CF Analysis

Objective: To train Ron Buckner to operate the Mass Selective Detector (MSD) to perform the CF analysis (dihydro-CF, CF, 6-methyl-CF) and to quantitate the CF analogs present.

Status: Ron Buckner's training is continuing on the MSD. He has become skilled at tuning, operating, and evaluating the data acquired. He has successfully performed a calibration, interpreted, and quantitated the CF analogs. He has evaluated samples under my supervision. Ron Buckner has become quite skilled in the operation of the MSD. He has been shown the preventative maintenance procedures. He has also been taught to recognize and assess instrumental problems, as the symptoms dictate and take the necessary corrective action. Ron Buckner will continue to acquire experience with this technique and instrumentation, to learn the intricacies of the system.

C. U.S. Testing

Objective: To obtain U.S. Testing's certification on nicotine from ART smoke runs.

Status: Many ART nicotine in smoke runs were analyzed in duplicate with standard additions (spiked) on 4 and 8 mg models to comply with the requirements for U.S. Testing's certification. In addition, an extraction study was conducted on nicotine smoke extracts from a one and a four hour extraction to insure that all of the nicotine is extracted after the first hour. This work was done in duplicate with the odd ports spiked. No additional nicotine was found after the four hour extraction proving to U.S. Testing's satisfaction that a one hour extraction is sufficient. U. S. Testing has certified this method and issued a report entitled, "An Improved Technique for Accurate Measurement of Low-Level Nicotine Delivery in Cigarette Smoke," dated 9/13/89.

D. Wide Bore and Capillary Chromatography

Objective: To train the laboratory personnel in the calibration and use of wide bore and capillary chromatography.

Status: The laboratory personnel in the GC Laboratory were taught to perform the following analyses on a DB-WAX wide bore column: humectants in filler and smoke, triacetin in smoke and fumarate and succinate in cigarette papers. In the Nicotine/Water Laboratory, the personnel were taught to perform the nicotine in smoke analysis on Project ART samples using a Stabilwax-DB capillary.

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E. Mass Selective Detector (MSD)

Objective: To develop an automated analysis using the Mass Selective Detector (MSD) in Selective Ion Monitoring (SIM) mode. This would eliminate the time consuming task of manually evaluating each of the mass spectra collected.

Status: Work on this project was delayed because of the large number of samples requiring CF analysis and because of time spent training Ron Buckner to run the MSD. All of the files needed have been created along with the calibration table. The report function has been set-up and some trial runs have been made. This system needs to be optimized and some parallel testing needs to be done between the scan and the SIM mode to insure agreement.

IV. MISCELLANEOUS

A. Presentations and Meetings

1. Pittsburgh Conference, Atlanta, Georgia, March 6-10.
2. Presentation at CTSD Project Meeting, "FM Approved Automated Robotic Dispensing System," in-house, March 28.
3. Presentation at CTSD Project Meeting, TCRC dry run, "Laboratory Robotic Dispensing System," in-house, August 30.
4. R&D Technical Seminar, "Laboratory Robotic Dispensing System," in-house, September 20.
5. TCRC, Richmond, Virginia, October 3-4.
6. TCRC Presentation, "Laboratory Robotic Dispensing System," Richmond, VA, October 4.

B. Completion Reports and Memos

1. Completion Report, "Laboratory Robotic Dispensing System," R. A. Forte, R. W. Kanipe and J. Y. Lewis, Acc. No. 89-042, June 6.
2. Completion Report, "Determination of Nicotine in Smoke for Alkaloid Reduced Tobacco Samples," J. Y. Lewis, R. A. Forte, J. A. Sampson, Acc. No. 89-036, July 21.
3. Memo to Mr. F. A. Lowman, "CF Analysis of Cigarettes from the Dominican Republic," February 16.
4. Memo to Mr. F. A. Lowman, "CF Analysis of Cigarettes from Mexico," February 21.
5. Memo to Mr. F. A. Lowman, "CF Analysis of Cigarettes from Brazil-August, 1988 Production," March 6.

6. Abstract for TCRC, "Laboratory Robotic Dispensing System," March 31.
7. Memo to Mr. J. E. Wickham, "Humectant and Plasticizer Levels of Commercial Cigarettes - 1988," March 31.
8. Memo to Mr. F. A. Lowman, "CF Analysis of Cigarettes from Mexico - January, 1989 Production," April 6.
9. Memo to Ms. C. C. Bright, "CF Analysis of Cigarettes from Brazil - August, 1988 Production," May 10.

C. Training Courses

1. "Introduction to RS/1," in-house, February 7-9.
2. "Advanced Performance Appraisal," in-house, July 19.
3. J & W Scientific Technical Seminar, in-house, August 9.

RAF:rad

Robert A. Dato

2022199422

PHILIP MORRIS U. S. A.

INTER - OFFICE CORRESPONDENCE

Richmond, Virginia

To: . Dr. Jane Y. Lewis

Date: January 9, 1990

From: . Barbara T. Joyner

Subject: . Accomplishments for 1989

I. METHOD DEVELOPMENT AND IMPROVEMENT

A. Filtrona 20-port CO Smoking Machine

Objective: To have the CO smoking machine fully operational and optimized for the analyses of TPM, CO and puff count.

Status: The Filtrona CO smoking machine was installed and is now fully operational. Mechanical problems with inconsistent volumes and electronic problems with the central control board were resolved. Data collected from cigarettes smoked on the Filtrona were found statistically to be not different from data acquired from the Phipps & Bird 20-port CO smoking machine.

B. Peak Coal Temperature

Objective: To acquire a new thermographic analysis system. To establish a method for measuring peak coal temperature on the new apparatus.

Status: A thermographic image analysis system was purchased from AGEMA after extensive evaluation of competitive systems. This system consists of a scanning infrared camera, controller/microprocessor, PC and monitor, and a printer. The 10-port rotary head smoking machine and a triggering device are left from the old system and are incorporated into the new system. The new system provides the following advantages over the old apparatus:

- eliminates use of liquid N₂
- eliminates manual entry of data
- automatic tracking of the coal as cigarettes burn
- lower frequency of calibration of scanner
- increased capability beyond measurement of peak coal temperature
- stand-alone system
- turnkey system

Installation of the system is complete. Monitor cigarettes have been smoked as a reference and compared to historical monitor data with similar means and standard deviations. Brand history is currently being acquired. Gail Yoss has been trained in the operation of the peak coal temperature apparatus. A method revision is in progress to be followed by a completion report.

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C. New Prototype 5-port Smoking Machine

Objective: To implement the new 5-port smoking machines (4) and DAS's. To coordinate with CAD and DED to accomplish this task.

Status: The prototype 5-port smoking machine has undergone several redesigns. The plexiglass hood was expanded to accommodate a physically larger smoking machine. The fan-cooled drive motor on the smoking machine was found to influence the air passage over the burning cigarettes. The housing for the electronics was removed from the hood and the fan is no longer used on a continuous basis.

The software for calculating CO and NO were written by CAD and the PC's were installed. Corrections in the software are being made by Woody Early of CAD. TPM runs using monitor cigarettes are being smoked and CO and NO data are being collected.

A Liebert air handling system was installed in the Gas Phase Laboratory in December. This system should stabilize temperature and humidity fluctuations within the smoking cubicles. Modification of the smoking hood now permits measurement of airflow.

D. Sugars and Alkaloids

Objective: To investigate an improvement over the current data system which has the capability of generating in-laboratory reports, thus eliminating the integrated interface controller (IIC) used for the sugars and alkaloids analysis.

Status: The Nelson® software system was evaluated as a stand-alone system for generating in-laboratory reports. This software is currently in use in ARD. Discussions have been held with Nick Latif of CAD who implemented the use of the Nelson system in ARD and recommends its installation.

II. LABORATORY MANAGEMENT

A. Supervision

Objective: To supervise laboratory personnel and coordinate workflow in the Special Smoking and Wet Chemistry Laboratories. To document performance, provide feedback and write annual performance appraisals of assigned personnel.

Status: My responsibilities in supervising the Special Smoking and Wet Chemistry Laboratories were changed in May. At that time, I became responsible for supervising the Gas Chromatography Laboratory. Duties resumed back to the Wet Chemistry and Special Smoking Laboratories in October. I documented performance, interacted closely in providing feedback to personnel in the laboratories to which I was assigned, and wrote annual performance appraisals for three technicians.

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B. Gas Phase Laboratory

3. Objective: To coordinate the modification of the cubicle housing the 20-port CO smoking machine to have optional ISO CO smoking conditions available.

Status: The controls to convert to ISO conditions were installed in January. ISO conditions still were not attainable. Discussions with Building Administration resulted in the installation of a Liebert air handling system (12/89). ISO conditions are now achievable.

C. Sugars and Alkaloids

Objective: To implement the use of control charts for monitor data in sugars and alkaloids.

Status: Ongoing. This effort was undertaken by Pamela Williams, a summer intern student, under the supervision of Jeff Sampson. I completed a short course on Statistical Process Control and gained a thorough understanding of this application.

D. Citrates Analysis

Objective: To incorporate the new method for determination of citrates in paper by ion chromatography into operation in the GC Laboratory.

Status: I received training from Garland Carter on the operation of the IC. Numerous mechanical, electronic and chemical problems with the IC system have been overcome. One remaining chemical interference is currently under investigation. The analytical method is under revision. Cindy Blair has been trained on the operation of the IC.

III. TECHNICAL ASSISTANCE

I provided training for Mr. Yap Swee Chye (Dept. of Scientific Services, Singapore) on the operation of the Filtrona 20-port smoking machine between August 22 and September 5.

The Analytical Methods used in the Gas Chromatography Laboratory have been updated to reflect the current procedure.

IV. SURVEYS

Freon in Filler

Status: No changes were noted in the previous survey for the analysis of Freon in filler of Philip Morris brands and competitors' brands. The results are reported in the August, 1989 monthly report.

V. PRESENTATIONS AND MEETINGS

1. Program Review presentations, January 19, April 13, July 11, October 12.
2. Evaluation of the Filtrona CO Smoking Machine, presentation, at CTSD Project Review, March 19, 1989.
3. AGEMA Thermal Imaging System Evaluation, presented at CTSD Project Review, December 7, 1989.

VI. CLASSES ATTENDED

1. Frontline Leadership
 - Fostering Improvement through Innovation, A&B, January 18.
 - Winning Support from Others - February 8.
 - Resolving Team Conflicts - March 1.
 - Confronting Issues with your Managers and Peers - March 17.
 - Building Constructive Relationships with your Manager - March 22.
2. Statistical Process Control (Barber & Assoc.) - June 5-8.
3. Affirmative Action - June 22
4. Performance Appraisal (Intermediate) - October 11.

VII. MEMOS

"Carbon Monoxide Delivery of Philip Morris Export Brands," memo to Dr. Jane Lewis, dated January 16, 1989.

"Gas Phase Delivery of Philip Morris and Competitive Brands," memo to Dr. Jane Lewis, dated January 20, 1989.

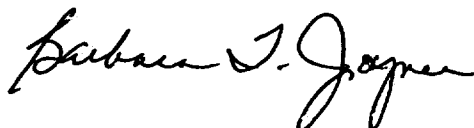
"Visit to Huguenot High School," memo to Murray Rosenberg, dated March 8, 1989.

"Evaluation of Filtrona CO Smoking Machine," memo to Dr. Jane Lewis, dated June 2, 1989.

"Menthol for Filler Analysis, Packed vs. Wide Bore Capillary," memo to Chris Kroustalis, dated June 6, 1989.

"Collaborative Menthol Study (QA/R&D)", memo to Dr. Jane Lewis, dated August 7, 1989.

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PHILIP MORRIS U. S. A.

INTER - OFFICE CORRESPONDENCE

Richmond, Virginia

To: . Dr. Jane Y. Lewis

Date: January 16, 1990

From: . Jeff Sampson

Subject: . Accomplishments for 1989

I. INSTRUMENTATION, METHODS DEVELOPMENT AND IMPROVEMENT

- A. Objective: To install and learn to operate the HP5890A capillary gas chromatograph and HP5895A ChemStation.

Status: The GC and ChemStation were set-up in January. The GC was equipped with a 15-meter Stabilwax-DB capillary column for nicotine analysis and a 30-meter DB-WAX capillary column for humectants, menthol and plasticizer analysis.

- B. Objective: To use capillary chromatography for nicotine in smoke analysis for ART cigarettes.

Status: The HP5890A capillary GC was set-up to perform nicotine analysis on ART smoke samples. Nicotine analysis is performed on a 15-meter x 0.25 mm ID x 0.25 micron film thickness Stabilwax-DB capillary column. The analysis time is 10 minutes per sample, including report generation on the ChemStation. Excellent agreement was shown between the Stabilwax-DB capillary column and the DB-5 wide-bore column previously used.

- C. Objective: To evaluate capillary versus wide-bore columns for nicotine analysis on ART smoke samples.

Status: A study was completed which showed excellent agreement between a 15-meter x 0.25 mm ID x 0.25 micron film thickness Stabilwax-DB capillary column and a 15-meter x 0.53 mm ID x 1.00 micron film thickness Stabilwax-DB wide-bore column. The wide-bore column was installed in an HP5880A packed column GC using HP injector port adapters and glass liners. A 5-meter fused silica guard column was installed before the analytical column which allowed the analysis time to be reduced from 40 to 20 minutes per sample. Although all ART smoke samples are currently being analyzed on a capillary GC, if a capillary GC is not available, nicotine can be analyzed on a packed column GC equipped with wide-bore columns.

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- D. Objective: To evaluate capillary versus wide-bore and packed columns for humectants, menthol and plasticizer analysis.

Status: Development work was started on the conversion of humectants, menthol and plasticizer analysis from packed and wide-bore columns to capillary columns. Packed columns lack the separating power required for complex samples, while wide-bore columns offer increased resolution but much longer analysis times. Preliminary work with a 30-meter x 0.25 mm ID x 0.25 micron film thickness DB-WAX capillary column on an HP5890A capillary GC indicates that analysis times of about 15 minutes per sample are possible and with higher resolution than with wide-bore columns.

The HP 5880A GC used for humectants analysis was modified to improve efficiency. The analysis is performed on a 30-meter x 0.53 mm ID DB-WAX wide-bore column with an analysis time of 45 minutes per sample. The installation of a five-meter x 0.53 mm ID fused silica guard column before the analytical column resulted in a decrease in analysis time to 25 minutes per sample.

- E. Objective: To replace the current Varian GC and VAX data processing system in the nicotine and water laboratory.

Status: Two HP 5890A gas chromatographs were placed into operation in July. The GCs are equipped with dual HP 7673 autosamplers, HP 3396 integrators, a capillary column system for nicotine analysis and a packed column system for water analysis. Laboratory technicians have been trained in the operation of the system.

Hewlett-Packard introduced the 3365 ChemStation software package in late 1989. This is a PC based product which offers full instrument control, integration of chromatograms and report generation. Two copies of the ChemStation software were purchased and one of the copies was installed in a Club 286 PC already located in the laboratory. This system will serve as a prototype for the entire laboratory automation system. CAD has been involved in interfacing the ChemStation to the VAX mainframe to transfer sample test results from the PC to the database.

- F. Objective: To select a replacement for the Filamatic system for filling sample tubes with extraction solution and develop a system to transfer solution from sample tubes to GC autosampler vials.

Status: A Gilson Model 222 sample changer was tested for sample tube filling and vialing operations. For sample tube filling, the Gilson is somewhat slower than the Filamatic, however, the dispensing is more accurate and reproducible. The Gilson system can dispense different volumes of solution by calling a program from the unit's keypad controller. The Gilson unit was also very efficient at transferring solution from sample tubes to GC autosampler vials. The programs supplied by Gilson were modified to ensure that there was no carryover or cross-contamination between samples during the transfer process.

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The Gilson system requires the use of a rubber septa for the 18 x 150 mm test tubes which were made of a softer rubber compound than those currently used. The West Company was able to supply a soft rubber septa which worked very well with the Gilson system.

II. TECHNICAL SUPPORT

- A. Objective: To investigate cyanide delivery from the four channel smoking procedure.

Status: In May, I was assigned to the Gas Phase Laboratory to try to bring hydrogen cyanide delivery for Monitor #25 cigarettes to within specification. During the next four months, I was able to learn the four channel smoking procedure and the influences of airflows and room conditions on the gas phase delivery of cigarettes. A series of steps were taken to try and isolate the cause of the problem which involved a close scrutiny of all aspects of the analysis: the smoking machines, valving, scrubbing towers, autoanalyzers, reagents, standards and smoking conditions. As a result of these efforts, the cyanide level for Monitor #25 increased significantly, but was still at the lower end of the calibrated limits.

- B. Objective: To set-up a capillary gas chromatograph for QA Product Audit.

Status: In February, I set-up an HP 5880A GC for Joe Garman in QA Product Audit to be used for nicotine analysis for ART smoke samples. This involved installing a 15-meter x 0.25 mm ID Stabilwax-DB capillary column, setting the GC operating parameters and optimizing the linear velocity and volumetric flow rate of carrier gas and setting the split ratio and septum purge flow rate. The response and chromatography from the capillary column was also checked and optimized.

- C. Objective: To provide technical and analytical support for Project Delta/Sigma and Project ART.

Status: We are continuing to analyze Delta/Sigma samples for nicotine, water and glycerin in smoke. Samples of extruded tobacco are also analyzed for PG and glycerin.

The nicotine and water laboratory continues to analyze a large number of ART smoke samples. Analysis of ART samples has now become a routine procedure.

III. MISCELLANEOUS

- A. Meetings and Seminars

Hewlett-Packard Capillary GC Seminar, Richmond, September.

J&W Scientific Seminar, Richmond, August.

Humidity Measurement Seminar, Richmond, October.

Dionex Ion Chromatography Seminar, Richmond, April.

Filtroha Users Group, Richmond, October.

Tobacco Chemists' Research Conference, Richmond, October.

B. Training Classes

Dionex Ion Chromatography Training Course, Atlanta, February.

Basic Techniques of Statistical Process Control, Richmond, October.

"Frontline Leadership"

- Basic Principles
- Giving Constructive Feedback
- Getting Your Ideas Across
- Recognizing Positive Results
- Dealing with Emotional Behavior
- Managing Effective Meetings
- Situational Leadership
- Establishing Performance Expectations

Selection Interviewing, in-house, July.

Salaried Discipline, in-house, June.

Performance Appraisal - Introduction, in-house, November.

C. Presentations and Reports

CTSD Project Meeting, "Nicotine Analysis," March.

CTSD Project Meeting, "Gas Phase Update," December.

Completion Report, "Determination of Nicotine in Smoke for Alkaloid Reduced Tobacco," Jane Y. Lewis, Robert A. Forte and Jeffrey A. Sampson, Accession No. 89-036, July 21, 1989.

D. Method

Draft Method "Nicotine in TPM by Capillary Gas Chromatography," submitted for Analytical Methods Manual, September.

E. Memos

Memo to Dr. Jane Y. Lewis, "Capillary Gas Chromatograph for QA," March 9.

Memo to Dr. Jane Y. Lewis, "Nicotine Analysis," March 13.

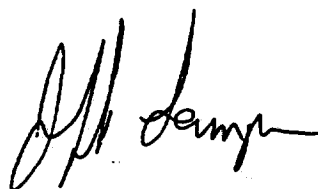
Memo to Dr. Jane Y. Lewis, "Proposed Systems for Nicotine and Water Laboratory," April 10.

Memo to Dr. Jane Y. Lewis, "Humectants Analysis," April 18.

Memo to Dr. Jane Y. Lewis, "Gas Phase Laboratory," June 9.

Memo to Mr. J. E. Wickham, "ISO Conditions in L-4217," June 15.

JAS:rad

A handwritten signature in dark ink, appearing to read "J. E. Wickham". The signature is written in a cursive style with a long horizontal stroke at the end.

2022199431

1989

ACCOMPLISHMENTS

FOR THE

CIGARETTE INFORMATION SECTION

2022199432

PHILIP MORRIS U. S. A.

INTER - OFFICE CORRESPONDENCE

Richmond, Virginia

To: . Mr. J. E. Wickham

Date: January 19, 1990

From: . Barbara S. Mait

Subject: . Accomplishments - Cigarette Information Section - 1989

The accomplishments for the Cigarette Information Section for 1989 are summarized below. Individual accomplishments for the professional staff are attached.

I. MARKET ACTIVITY

A. Domestic

Seventy-four (74) new brands were reported in 1989 by the Cigarette Information Section. Of these, fifty-one (51) were test marketed and twenty-three (23) were distributed nationally. All six major tobacco companies introduced one or more brands in 1989.

Philip Morris test marketed Alpine 80 (Box) and Alpine Lights 80 (Box), four versions of Cartier 100 Box (plain and menthol), 10 versions of Next 85 & 100 (plain and menthol), four versions of Merit De-Nic® 85 (plain and menthol) and four versions of Marlboro Ultra Lights 85 & 100, and introduced Virginia Slims SuperSlims 100 Box (plain and menthol) cigarettes nationally.

R. J. Reynolds test marketed More White Lights 120 (plain and menthol), Vantage Excel 100 and Chelsea 100 Box (plain and menthol). Nationally introduced were Doral Full Flavor Menthol (85 & 100), Doral Ultra Lights 85 and Magna Lites 80 (Box) cigarettes. Seven (7) versions of Best Value cigarettes were distributed in K-Mart stores.

Brown & Williamson test marketed Belair 85 & 100, Belair Lights 85 & 100, Kool Ultra Lights 85 & 100, and Kool Lights 85 & 100 cigarettes.

Lorillard test marketed Spring Lemon Lights 85 & 100 (plain and menthol) and Harley Davidson 85 and Harley Davidson Lights 85 cigarettes.

American test marketed Montclair Lights 100 (plain and menthol), Montclair Full Flavor 100, American Lights 100 (Menthol), American Filters 85 and 100 and Misty Lights 100 Box (plain and menthol) cigarettes. Malibu Ultra Lights 100 cigarettes were introduced nationally.

2022199433

The Liggett Group introduced nationally nine versions of Pyramid, a subgeneric cigarette.

B. International

Twenty-five (25) new brands were introduced to the Japanese market in 1989:

Japan Tobacco, Inc. introduced Cabin Milds KS 20's (Box), Cabin Super Mild KS 20's (SP), Marlboro KS 20's (Box), Mild Seven Super Lights KS 20's (SP), Claris Lights KS Menthol (SP), Sometime Lights KS Menthol 10's (Box), Beside KS 20's (SP), Peace International 95 20's (Box) and Epique SuperSlim 100 Menthol 20's (Box).

R. J. Reynolds introduced Camel Lights KS 20's (Box) and Vantage KS 20's (SP).

Brown & Williamson introduced Lucky Strike Milds KS 20's (SP) and Kent Deluxe Milds 100 20's (Box).

F. J. Burrus, Inc. of Switzerland introduced Parisienne Mild KS 20's (Box) and Pierre Cardin Lights 100 20's (Box)

The London Tobacco Company of England introduced London Lights KS 20's (Box) and Ducal KS Menthol 20's (Box).

S.E.I.T.A. introduced Gitanes Lights KS 20's (Soft Pack).

The American Cigarette Company, Ltd., a subsidiary of Rothmans, introduced Vogue Superslims 100 20's Box (plain and menthol) and Peter Stuyvesant KS 20's (SP).

The House of Craven, another subsidiary of Rothmans, introduced Craven "A" Super Mild 100 20's (Box) and Craven "A" 100 20's (Box).

Two brands from China were introduced in Japan: San Chl KS 20's (SP) from the Kunming Factory and Shiwn KS 20's (SP) from the Yuxi Factory.

II. AGING STUDIES

Nine aging studies were conducted on samples during 1989. These studies involved 452 samples. These aging studies included testing of mentholated inserts, ART storage studies, special shipping cases, Kaymich Menthol Applicator, and menthol stability studies. Analyses performed with these studies included menthol in smoke, filler, filter, foil, and pack, FTC tar and nicotine deliveries, pack O.V. and glycerin. The conditions these samples were subjected to included jungle, desert, cold and accelerated aging.

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III. U.S. TESTING

Samples from two countries were analyzed for TPM, FTC tar, nicotine, water, and puff count for U.S. testing. These tests were performed for advertising purposes.

1. Two samples from Japan (July).
2. Ten samples from Thailand (November).
3. Three low nicotine samples for ART certification (July).

IV. TOBACCO INSTITUTE TESTING LABORATORY (TITL)

Market Sample #31 was published by TITL in 1989. Statistical analyses of the data indicate differences in smoke deliveries still exist between TITL and Philip Morris. Two comparative studies were conducted with TITL in 1989 to resolve these differences. However, the comparative studies show the differences still exist. The Industry Monitor (IM#13) was shipped to TITL and all the major domestic companies in 1989 to help resolve this difference in deliveries.

VI. INTERNATIONAL STUDIES

A. Comparative Studies

Three comparative studies were performed with International during 1989. Smoking runs for five samples were prepared for a study which involved eight laboratories in Latin America, the Philippines and R&D. Six brands for CORESTA Task Force Method No. 10 were smoked to test the revised European Barclay cigarette holder. This test involved eighteen laboratories worldwide. Six brands were prepared and smoked on the Filtrona 350 smoking machine for the CORESTA Harmonization Study. The purpose of this study was to evaluate the different European smoking methods.

B. Market Survey

Twenty-six (26) brand were received from Korea. The purpose of this testing was to survey the brands sold on the Korean market.

III. COORDINATION OF CIGARETTE FIRMNESS STUDY

A collaborative cigarette firmness study was conducted between PME and CTSD. The purpose of this study was to establish a correction factor to be used when comparing firmness values generated under FTC and ISO conditions. The final report was issued by Dr. J. Zuber of PME.

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IV. DIVISION SUPPORT

A. C.I. Reports

1. Domestic - The Cigarette Information (C.I.) Report was published bimonthly. Data were reported on 74 new brands and brand modifications were noted in the following companies: R. J. Reynolds, Brown & Williamson, Lorillard and American Tobacco Co.
2. International - The Japan C.I. Report was published quarterly. Data were reported on 25 new brands and brand modifications were reported for eleven (11) JTI manufactured brands.

B. International

5224 samples were received and tested for International during 1989.

C. Analyses Performed

A total of 1.5 million analyses were performed during 1989.

IX. GENERAL GOALS

A. Monitor Cigarettes

1. The Industry Monitor (IM#13) was prepared and calibrated in 1989. In total, 3.2 million cigarettes were produced in Semiworks. This monitor delivers approximately 17 mg tar and will be used by all the domestic tobacco manufacturers and TITL.
2. The Oven Volatile Monitor (OV#1) was prepared and canned. This monitor is an 85 mm nonfiltered cigarette which uses the Marlboro blend with no casing or aftercut. This monitor will be used in all conditioned areas of CTSD to ensure temperature and humidity are maintained for sample equilibration. The OV target is 12.3%.
3. The Filter Efficiency Monitor Rods (FE#25) were prepared and canned.

B. New Instrumentation

Five electric lighters were purchased for the Smoking Laboratory. These lighters are manufactured by Borgwaldt. These new lighters are more economical and safer than the BIC® lighters used previously.

Two upgraded static burn units were installed in the Smoking Laboratory. These new units will allow for the increased demand for the static burn test. We now have double the capacity with these new units.

The Smoking Laboratory is using a digital meter to measure airflow in the smoking hoods. This meter is similar to others used throughout the industry.

A new Data Acquisition System (DAS) was installed for the oven volatile analysis. This new system replaced an obsolete DAS and has improved the sample throughput in this laboratory.

C. Smoking Technology

Because the Japanese government will require tar and nicotine data be printed on cigarette packs, the C.I. Section is smoking all Japanese brands using the Tobacco Institute of Japan (TIOJ) smoking method. This is being done for all new and existing brands at the request of the Japanese New Product Development personnel.

IX. REPORTS

During 1989, the following reports were issued:

1. One hundred (100) HTI and POL reports
2. Monthly Monitor Statistics
3. Seven (7) Unidentified Consumer Panel Cigarettes
4. Market Sample #31 - Comparison of Tar, Nicotine and CO Deliveries of TITL and Philip Morris
5. Five Hundred Seventy-six (576) International Reports
6. Completion Report "Summary of the Seven Smoking Methods Used throughout the World."
7. Generic Cigarette Report
8. Philip Morris Brand History Update
9. Market Activity Summary - 1989
10. Summary of 1989 Loaned Executive Program

X. PERSONNEL

One technician was hired in the C.I. Section during 1989. This new hire brought the Section to full staff in September.

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X. PERSONAL

The following courses and seminars were attended:

1. 1989 Loaned Executive to the United Way
2. Smoking Machine User's Group
3. Selection Interviewing

BSM:rad

Attachments

Barbara Matt

2022199438

PHILIP MORRIS U. S. A.

INTER - OFFICE CORRESPONDENCE

Richmond, Virginia

To: . Barbara S. Mait

Date: January 16, 1990

From: . E. C. Chambers

Subject: . Accomplishments for 1989

The accomplishments for Sample Receiving/Preparation Laboratory for 1989 are as follows:

I. SAMPLE RECEIVING/PREPARATION - INTERNATIONAL

- A. A total of three thousand two hundred and nine (3,209) samples were received and prepared for the routine C.I. International program. One thousand three hundred and ninety-nine (1,399) samples were received and processed for nonroutine samples.
- B. Samples were received and processed from Thailand (10) and Japan (2) for U.S. Testing. This is in collaboration for an advertising campaign. Twenty-six (26) samples were received from Korea for C.I. analyses. The purpose of this testing was to survey the brands sold on the Korean market.
- C. Cigarette Testing Services Division began testing all competitive and Philip Morris brands (40) from the Japan market pick-up for TIOJ tar. All brands received from the Japan marketplace were smoked FTC and TIOJ procedure for a period of three months.
- D. Smoking runs were prepared to generate regression curves comparing the FTC smoking method to other smoking methods. The methods tested were FTC, ISO, Australian, Canadian, United Kingdom, TIOJ and DIN.
- E. Collaborative Studies
 - 1. Smoking runs were prepared for five samples to compare FTC tar and nicotine results among eight C.I. laboratories in the Latin American affiliates, Philippines and PM USA.
 - 2. Sixteen smoking runs were prepared for the CORESTA Task Force "Method No. 10." The objective of this procedure was to test a revised cigarette holder to be used for Barclay type cigarettes.
 - 3. Six samples were received and prepared for the CORESTA Harmonization Study. The purpose of this study, which was conducted in Europe, Germany, United Kingdom and the United

States is to have a universal smoking method for all laboratories.

II. SAMPLE RECEIVING/PREPARATION - DOMESTIC

- A. Smoking runs were prepared and smoked for the calibration of Industry Monitor #13 for FTC tar and ISO tar procedures. This monitor is being used by all major cigarette companies and the Tobacco Institute Testing Laboratory. Low Delivery Monitor #6 (I#1) was also calibrated for the ISO tar procedure.
- B. A series of samples were submitted for analytical data on the following menthol "aging" studies:
 - 1. Four models using mentholated inserts in the packaging at different locations (40).
 - 2. Acid vs. alkaline sizing paper processing (26).
 - 3. Shipping case storage study with no carton overwrap, polypropylene overwrap and foil carton overwrap (23).
 - 4. 7% triacetin (room temperature) vs. 4% triacetin (155°F) (10).
 - 5. Kaymich Menthol Application (97).
 - 6. 6 mg Trim VI models (28).
 - 7. Heat set filters by Filtrona (86).
- C. Two storage studies were conducted on eight models for Project ART. Six models were made using low alkaloid blend and two models used regular alkaloid blend. The samples used were Art 85, 100 and Art Menthol 85. This testing resulted in one hundred forty six (146) samples. In addition to the storage study, one thousand seven hundred and thirty-seven (1,737) samples were received for Project Art. These samples were submitted as follows:
 - 1. FTC Tar, physical and chemical analyses (671)
 - 2. POL testing (26) Ad/Pack Testing (3)
 - 3. Additional physical and/or chemical (41)
 - 4. Menthol analyses (40)
 - 5. Filler and reconstituted samples (914)
 - 6. New brand analyses (14)
 - 7. Pack O.V. (28), sieves (2)

III. OVEN VOLATILES

- A. A total of 14,905 oven volatiles were determined for equilibrated O.V., O.V. as is and pack O.V. The number of samples ground for various chemical analyses were 6,930.
- B. Oven checks were conducted monthly with Quality Assurance Laboratory to insure uniformity in all P.M. locations.
- C. An 85 mm, nonfiltered cigarette using the Marlboro blend with no casing or A/C was made to use as an oven volatiles monitor (OV#1). This monitor is now being used in all areas of CTSD to insure that humidity and temperature are maintained for the equilibration of samples. This monitor has less variation than the previous Monitor #25 since it does not contain any casing or A/C. The average oven volatile is 12.3% for O.V. #1 vs. 13.7% for Monitor #25.

IV. COMPUTER APPLICATIONS

- A. A laser printer was installed in the Sample Receiving Laboratory.
- B. A laboratory workstation system was installed in the Moisture Laboratory.

V. REPORTS

- 1. Monthly Progress Reports
- 2. Performance appraisals for eight laboratory personnel
- 3. Plans and Objectives for 1990
- 4. Accomplishments for 1988

EC:rad

Elizabeth A. Chambers

2022199441

PHILIP MORRIS PRODUCTS INC.

INTER-OFFICE CORRESPONDENCE

Richmond, Virginia

To: . Barbara S. Mait
From: . Susan W. Laffoon
Subject: . Accomplishments For 1989

Date: January 16, 1990

I. INTERNATIONAL

- A. Objective: Coordinate the receipt and testing of samples from P.M. International submitters. Review, interpret and report international data to the Tobacco Technology Group, Product Development and P.M. International licensees and subsidiaries.

Status: A total of 5224 international samples (all types) were tested in 1989, a 1% increase over the total number received in 1988. 576 routine (Test #) international reports were issued in 1989. There was an increase of 8% in the number of routine (Test #) samples received in 1989, which is attributed to the monthly samples received from the Japanese market. Samples submitted for international product development increased 4%. The 1989 international sample totals are reported below by request type:

Routine O-codes (Test #)	Non-routine O-codes	D-codes (Product Development)	P, Z, F-codes (Materials Evaluation)
3209	1393	588	34

- B. Objective: Consolidate P.M. and competitive brand data for the Japan C.I. Report.

Status: In 1989, the Japan C.I. Report was issued quarterly.

Report #8, March 1
Report #9, June 1
Report #10, September 1
Report #11, December 1

The content and format of the Japan C.I. Report were modified in December. The following tables were removed: listing of tar and nicotine data generated by TIOJ, brands ranked by gas phase smoke index, firmness, humectant content by manufacturer, critical cigarette defects, and tobacco utilization. A minor brand section was added to the report.

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I. INTERNATIONAL (CONT.)

Twenty-five new introductions to the Japanese market were highlighted in the Japan C.I. Report during 1989. Nine of these products were manufactured by Japan Tobacco, Inc. and four were U.S. exports.

Japan Tobacco, Inc.

Cabin Mild KS 20's (Box)
Cabin Super Mild KS 20's (Soft Pack)
Marlboro KS 20's (Box)
Mild Seven Super Lights KS 20's (Soft Pack)
Claris Lights KS Menthol 20's (Soft Pack)
Sometime Lights KS Menthol 10's (Box)
Epique Superslim 100 Menthol 20's (Box)
Beside KS 20's (Soft Pack)
Peace International 95 20's (Box)

R. J. Reynolds

Camel Lights KS 20's (Box)
Vantage KS 20's (Soft Pack)

Brown & Williamson

Lucky Strike Milds KS 20's (Soft Pack)
Kent Deluxe Milds 100 20's (Box)

F. J. Burrus, Inc., Switzerland

Parisienne Mild KS 20's (Box)
Pierre Cardin Lights 100 20's (Box)

The London Tobacco Company, England

London Lights KS 20's (Box)
Ducal KS Menthol 20's (Box)

S.E.I.T.A. (previously the French monopoly)

Gitanes Lights KS 20's (Soft Pack)

The American Cigarette Company, Ltd. (subsidiary of Rothmans)

Vogue Superslms 100 (Plain & Menthol) 20's (Box)
Peter Stuyvesant KS 20's (SP)

The House of Craven (subsidiary of Rothmans)

Craven 'A' Super Mild 100 20's (Box)
Craven 'A' 100 20's (Box)

Kumming Cigarette Factory, China

San Chl KS 20's (SP)

Yuxi Cigarette Factory, China

Shiwn KS 20's (Soft Pack)

Eleven brand modifications were highlighted in 1989; all of which were for brands produced by Japan Tobacco, Inc.

In order to comply with the Japanese government's requirement in 1990 that "all paper-rolled tobacco products domestically marketed" be labeled with tar and nicotine data, the monthly samples from the Japanese market were smoked by both FTC and TIOJ methods for three consecutive months. The data were reported to Japan Product Development in November and updated in December.

II. COMPARISON OF SMOKING PROCEDURES

Objective: Compare the data obtained from the FTC smoking procedure with data from other smoking procedures.

Status: In May, correlation curves for tar and nicotine data were generated for the FTC method versus the ISO, UK, Canadian, Australian (CPM), DIN and TIOJ smoking methods.

III. MARKET SAMPLE #31 - TITL VERSUS PHILIP MORRIS

Objective: Compare the tar, nicotine and CO deliveries generated by TITL and Philip Morris for Market Sample #31.

Status: The results of Market Sample #31 were reported in the memo, "Comparison of Tar, Nicotine and Carbon Monoxide Deliveries for Market Sample #31: TITL versus Philip Morris", April 10, 1989.

IV. U.S. TESTING

Objective: Assist with certification of cigarette brands.

Status: In November, ten cigarette brands for Thailand were smoked for certification by U.S. Testing. The smoking data were gathered in RS/1 file format, and statistics were generated. The results were reported to U.S. Testing.

V. MONITOR CALIBRATION

Objective: Assist the C.I. Section with the calibration of smoking monitors.

Status: The FTC smoking data for IM#13 and LDM#6 and the ISO smoking data for IM#13 and M#2 were gathered in RS/1 file format and sent to Dick Jones for calibration. A memo reporting the FTC smoking specifications for Industry Monitor #13 (IM#13) was issued December 12.

VI. ADDITIONAL REPORTS

A. Generic Cigarette Report - Updated in September

B. Results of Three Interlab Studies Conducted by TITL, September 21, 1989 (A summary of the results from studies conducted July 1988, October 1988 and April 1989)

C. Interim C.I. Highlights - August, 1989

D. Monitor #25 and Low Delivery Monitor #5 Data for August and September, 1989

E. Industry Monitor #13 and Low Delivery Monitor #5 data for November, 1989

F. Cigarette Information Report - September, 1989

G. Unidentified Consumer Panel Cigarettes (X9HB & X9HD)

H. Interim C.I. Highlights - October, 1989

I. Advertised versus FTC Tar Values for Philip Morris Products,
November 7, 1989

VII. SAFETY

Objective: To act as Safety Committee representative for CTSD.

Status: In 1989, I attended the R&D Safety Committee meetings and conducted and reported the monthly safety inspections for CTSD. I provided safety orientation for all new employees. Various safety programs were presented at the monthly division meetings and section meetings.

VIII. TRAINING

I attended "IBM PC Operation for New Users" on December 1. This full day class is a general introduction to IBM desktop microcomputers and is required as a prerequisite for Lotus 1-2-3.

Susan Gaffoon

2022199445

PHILIP MORRIS U. S. A.

INTER - OFFICE CORRESPONDENCE

Richmond, Virginia

To: . Mrs. Barbara S. Mait

Date: January 15, 1990

From: . Judith G. Lightner

Subject: . Accomplishments for 1989

The accomplishments for 1989 for the Smoking Laboratory are as follows:

I. SMOKING LABORATORY - GENERAL

- A. Tar and nicotine deliveries for several different smoking procedures and methods were determined. The objective of this testing was to provide data for comparative purposes. Regression curves were established for each method. In addition to the FTC method, testing included the following methods: ISO, DIN, TIOJ, CPM, UK and Canada.
- B. A collaborative study of a revised cigarette (filter) holder for CORESTA was completed. The objective of this study was to assess different types of cigarette holders for determining smoke deliveries of Barclay type cigarettes in Europe.
- C. Evaluation of tar and nicotine deliveries for Philip Morris and competitive brands was determined for the purpose of supporting advertising claims in Japan and Thailand. This testing was done in conjunction with U.S. Testing. Also, a survey of twenty-six brands from Korea was performed for advertising purposes.
- D. A study was completed with QA and R&D to assess the use of trim adapters versus precut dental dams. The objective of this study was to determine if there were any significant differences when smoking 17 mm circumference cigarettes with precut dental dams versus the trim adapters. No significant differences were observed.
- E. Samples were submitted and smoked for FTC tar for Round Robin Testing. This testing was to compare the C.I. Laboratories in Latin America, Philippines and PM USA.
- F. As of 1990, the Japanese Government will require that "all paper rolled tobacco products domestically marketed" must be labeled with tar and nicotine figures for advertising purposes. Testing for all brands currently in the Japan C.I. Report and some selected minor brands were monitored and smoked by both the FTC and Japan modified (ISO) TIOJ method of smoking.

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- G. The calibration for Industry Monitor #13 for FTC and ISO smoking was completed. Statistical data were established using the Statistical Process Control procedures. This monitor will be used by all major cigarette companies. ISO Monitor #2 was also calibrated and statistical data established.
- H. A test comparing the static burning of eight cigarettes versus 16 cigarettes was performed to determine if there were any significant differences in burning eight cigarettes versus 16 cigarettes per sample. No significant differences were observed.
- I. Rotation of personnel between the Smoking Laboratory and Sample Preparation was ongoing. This is done to provide versatility and flexibility of personnel by keeping them abreast of changes in methods and procedures.
- J. As of December, 1989, the Smoking Laboratory began using control charts to assist in monitoring the smoking machines and controlling variation.

II. LABORATORY AUTOMATION - EQUIPMENT

- A. An updated version of the 20-port static burn machine was installed to accommodate static burning requests. This machine now has twice the capacity (40 ports).
- B. A Borgwaldt smoking machine with an electrostatic trap was installed to accommodate the DIN smoking methods.
- C. Two cubicles in the Smoking Laboratory now have the capacity to switch from FTC conditioning (75°F, 60% RH) to ISO conditions (71.5°F, 60% RH).
- D. Five Borgwaldt electric lighters were purchased and are in use in the Smoking Laboratory. These lighters have proven more economical and safer than the BIC type lighters and represent a cost savings of over \$2,000.00.

III. ROUTINE ANALYSES

The following routine analyses were provided:

- A. TPM/Puff Count
- B. Filtration Efficiency
- C. Filler Rod TPM
- D. Smoke Deliveries per Puff
- E. Static Burning Time

IV. PERSONAL

The following meetings and courses were attended:

- 1. North American Smoking Machine Users Group Meeting (10-2-89).

2. QA and R&D Meetings
3. Basic Techniques of Statistical Process Control

V. MISCELLANEOUS

Visitors to the Smoking Laboratory last year were:

Mr. Alan Wong - Hong Kong
Mr. Tom Askew - TTG
Mr. Cliff Rumbald
Mr. Saud Bob Tain
TIOJ Delegation
Mr. Paul Hendry - Sales Director, PMI Germany
Engineering Personnel from the Manufacturing Center
Leo Burnett personnel
PM's wholesalers from the Caribbean
Kraft VP's
Tobacco Farmers from N.C. State
JTI Managers
Dr. Borsos - Director of Hungarian Tobacco Research
Dr. Kendra, VP of H.T.R.I. from Michigan State

JGL:rad

Judith G. Ziegler

2022199448

1989

ACCOMPLISHMENTS

FOR THE

CIGARETTE & TOBACCO

PROPERTIES SECTION

2022199449

PHILIP MORRIS U. S. A.

INTER - OFFICE CORRESPONDENCE

Richmond, Virginia

To: Mr. J. E. Wickham Date: January 24, 1990
From: R. A. Thesing
Subject: Accomplishments 1989 - Cigarette & Tobacco Properties Section

Attached are the accomplishments for the Cigarette and Tobacco Properties Section. A summary of the accomplishments for 1989 are given below.

I. SPECIAL INVESTIGATIONS AND METHODS DEVELOPMENT

A. Dynamic RTD/Ventilation

To establish a procedure for measuring RTD and ventilation as cigarettes are smoked.

Results: An evaluation of the instrument indicates that it will provide requestors with reproducible results on a per-puff basis for dynamic RTD and ventilation. The instrument is currently available for dynamic measurement of various cigarette design models and filter types. This equipment should aid filter development, cigarette technology and product development personnel in the design/performance characteristics of new or existing models.

B. Firmness

1. Objective: Support the collaborative testing between various PM laboratories.

Results:

- a. Comparative testing between PM Richmond and FTR showed that a difference of approximately 0.2 mm still exists between the two laboratories. ISO conditions at FTR yielded consistently lower (firmer) values than samples tested at ISO conditions in Richmond. Measurements of tobacco bed temperature revealed that FTR's results were 3-3.5°F lower than those in Richmond. A strong directional correlation between tobacco temperature and firmness exists. Further testing is planned.
- b. Completed an evaluation of the firmness instruments using five different cigarette brands and testing at various relative humidity levels.

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- c. Participated in a firmness collaborative study with Pierre Soquel of FTR. The testing was conducted on cigarettes from Switzerland at two condition levels (FTC and ISO).
- d. Additionally, Jean-Pierre Mussini and Marcel Hugenin of FTR were in Richmond to test a strain gauge calibrator for the firmness instruments. At that time, firmness testing was conducted on two cigarette brands at two condition levels (FTC and ISO) and on two firmness instruments (R&D and FTR).

2. Objective: To establish a calibration standard via silicone or other suitable material with three (3) different firmness values (3.5, 3.0, 2.5 mm).

Results: A calibration standard was requested which would be reproducible over a 6-12 month period. Currently, there are standards available which show reproducible results over a three month period. Testing will continue between R&D and QA.

C. Peak Coal Temperature

Objective: To assist Ms. B. Joyner in her efforts to assemble hardware, understand the software and bring the Agema Thermovision instrument on-line.

Results: Successfully assisted Ms. Barbara Joyner with the assembling of the hardware of the Agema Thermovision System, mastering of the specific software needs, and total integration of the system to the needs of CTSD.

D. Borgwaldt Cylinder Volume Instrument

Objective: To evaluate commercially available instruments, develop testing procedures and analyze new methods of cigarette testing in order to increase test efficiency, improve accuracy or replace obsolete instrumentation.

Results: The re-engineered (prototype) cylinder volume instrument, manufactured by Borgwaldt, was being evaluated by the Standards Laboratory of Quality Engineering. A comparison study between the existing instrument and the prototype instrument using Marlboro filler was performed by the Physical Testing Laboratory. The study showed the results were comparable.

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E. Citrate in Cigarette Paper

Objective: To develop an ion chromatographic procedure for separating and quantifying citric acid.

Results: The procedure was verified using IC from selected brands of known citrate level. The results agree with the GC (gas chromatographic) method. The procedure has been passed to the Analytical Chemistry Section of CTSD. A method for CTSD's use has been submitted to the Methods Committee.

F. Industry Monitor #13

Objective: Coordinate the production, equilibrating and canning of the industry monitor.

Results:

- (1) 3.2 million monitor cigarettes were canned during a four day, two shift operation in June. This monitor had a firmness of 2.78 mm with 98% of the product at ± 25 mg of target weight.
- (2) Approximately 850 cigarette magazines were stored on special shelving which was fabricated to accommodate the cigarettes for the equilibration period. Laboratory conditions were closely monitored with wet bulb/dry bulb psychrometers, and circulating fans were installed to maintain uniform airflow within the laboratory. Necessary instruments were temporarily set up in other laboratories to maintain workflow of priority samples during this period of approximately eight weeks.

G. Miscellaneous Investigations

Extruded tobacco filaments in RJR's Best Value generic products
Menthol cigarette filter holder - Japan
RJR's Premier Smokeless product
Microscopic examination of RJR cigarette papers
Cigarette papers on Marlboro cigarettes worldwide

II. LABORATORY AUTOMATION

Physical Testing Robotic Test Station

Objective: To provide support to the Development Engineering Division during design and assembly of the robotic test station. This support included development involvement, understanding of robotic capabilities and knowledge of instrumentation. The robot will be capable of testing cigarette circumference, total resistance-to-draw, filter resistance-to-draw, ventilation, cigarette length and filter length. This test station will be able to handle 85% of the various samples tested.

Results: The robotic test station was delivered in November. The system was debugged and fine tuned. Comparative studies will follow.

III. PUBLICATIONS, PRESENTATIONS, REPORTS

A. Video Lab Procedures

Objective: Liaison between Training Center and Laboratories. Coordinate schedules, personnel, shooting, viewing tapes and manuscripts. Edit/revise procedures as needed.

Results: The video for the oven volatiles procedure was completed during the third quarter. This completes the fourth video of laboratory procedures.

B. Pictorial Diary

Objective: Photograph all new brands and package changes. Update annually the pictorial diaries distributed throughout R&D and New York Office.

Results: Photos of all new brands and package changes were added to the twenty pictorial diaries which are distributed throughout R&D and the New York Office. Completed first quarter.

Target: First Quarter - Completed

C. Annual Investigation of Reconstituted Tobacco

Objective: Investigate each major manufacturer's reconstituted tobacco annually. Prepare written report.

- A. Microscopic
- B. Physical
- C. Chemical

Results: Reconstituted tobaccos from Philip Morris and competitor's brands was microscopically examined for material content and type of process. Brown & Williamson was the only manufacturer that made a change in their reconstituted tobacco since these materials were examined in 1988.

Brown & Williamson uses three types of reconstituted tobacco. Two are made by the papermaking process and the third is an "RCB type" cast sheet. This "RCB type" sheet material is mixed in a 50/50 ratio with the "RL type" sheet in only Viceroy 85 and 100 cigarettes. The "RCB type" sheet contains diamonium phosphate (DAP) as indicated by the levels of soluble ammonia (0.69%), phosphorus (2.10%) and the high total alkaloid content.

Target: Fourth Quarter - Completed

D. Consolidated Report

Objective: To collect domestic brand samples for cigarette firmness, cylinder volume, coal removal and ventilation characteristics analyses. To evaluate data and summarize these data in an annual report.

To train the supervisor of the Materials Evaluation Laboratory to assume the cigarette firmness and cylinder volume responsibilities for this project, and to train the supervisor of the Microscopy Laboratory to assume the coal removal and ventilation characteristics responsibilities for this project. These responsibilities include collection of samples, data evaluation, updating of RS1 files and summation of results.

Results: Collection of samples were submitted for cigarette firmness, cylinder volume, coal removal and ventilation characteristics analyses on a monthly basis. All brands are tested once a quarter. This year, however, R. J. Reynolds brands were tested more frequently to determine any changes in these parameters due to the decrease in tobacco weight in most of their brands.

Training of personnel assuming responsibilities for this project began during the last quarter of 1989, and will continue into 1990.

RAT:rad

Attachments

Richard A. Thy

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PHILIP MORRIS U. S. A.

INTER - OFFICE CORRESPONDENCE

Richmond, Virginia

To: . Mr. Richard A. Thesing
From: . Garland V. Carter
Subject: . Accomplishments for 1989

Date: January 17, 1990

I. SPECIAL INVESTIGATIONS AND METHODS DEVELOPMENT

A. Citrate in Papers by Ion Chromatography

Objective: To develop an ion chromatographic procedure for separating and quantifying citric acid extracted from cigarette papers.

Results: The procedure was verified using our ion chromatograph for testing papers from CI brands. The results agree with the gas chromatographic method, an ion chromatographic method was edited for CTSD's use and submitted to Methods Committee. The procedure was passed on to the Analytical Chemistry Section.

B. Dynamic RTD/Ventilation

Objective: To evaluate a novel instrument to determine its capabilities for monitoring RTD and ventilation changes as cigarettes are puffed.

Status: An evaluation of the instrument indicates it provides reproducible results on a per-puff basis for dynamic RTD and ventilation. The instrument is ready for investigations of these parameters in different filter types to aid Filter Development with design/performance characteristics.

C. Industry Monitor #13

Objective: To stage the fabricated monitor for conditioning and canning.

Status: With the help of Building Administration, racks for staging the monitor in a conditioned laboratory were fabricated. The racks provided the vertical space so that the cigarettes could be stacked for conditioning. I also helped during the canning of the monitor.

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II. ROUTINE ANALYSES

A. Glycyrrhizic Acid

Glycyrrhizic acid was quantified in samples to support the following projects: Marlboro Standardization, ART, Natural, Famous (PMI) and Bonded Ends. Samples were also quantified from Bright Casing studies at Stockton Street, Dryer Studies and in block licorice from Manufacturing.

B. Filter Flare-up

Filter flare-up testing was performed on all new brands introduced during 1989. Incidences of flare-up were noted for competitors brands and investigated for Philip Morris brands.

III. PUBLICATIONS, MEMOS, PRESENTATIONS

1. Project Meeting: Citric Acid by Ion Chromatography, March 28.
2. Project Meeting: Five-Port Dynamic RTD/Ventilation Instrument, December 7.
3. Memo to Mr. J. E. Wickham, "Flare-up Potential of New Brands for 1988 - First Quarter, 1989," dated May 11, 1989.

IV. CAREER DEVELOPMENT

1. Attended the North American Smoking Machine Users Group meeting sponsored by Fidus Instrument Corp. on October 2.
2. Attended "Technical Report Writing," by Dr. A. Eisenberg, November 15-16.

GVC:rad

Barclay V. Carter

2022199456

PHILIP MORRIS U. S. A.

INTER - OFFICE CORRESPONDENCE

Richmond, Virginia

To: Mr. Richard A. Thesing
From: Daniel P. Lisbon
Subject: Accomplishments for 1989

Date: January 10, 1990

I. SPECIAL INVESTIGATIONS AND METHODS DEVELOPMENT

A. Agema Thermovision Peak Coal Temperature

Objective: To assist Ms. Barbara Joyner in her efforts to assemble hardware, understand the software and bring the instrument on-line.

Results: Successfully assisted Ms. Barbara Joyner with the assembling of the hardware of the Agema Thermovision System, mastering of the specific software needs, and total integration of the system to the needs of CTSD.

B. Carbon Analysis

Objective: To devise an alternative method to analyze carbon in filter plugs.

Results: Along with Ms. Nancy Ryan, an alternate method to analyze carbon in filter plugs, with the intent to reduce sample time and increase accuracy, was thoroughly investigated. The results of our findings are documented in a report titled, "Investigation of Carbon Analysis in Filter Plugs."

C. Firmness

Objective: To establish a calibration standard via silicone or other suitable material with three different hardness values (3.5 mm, 3.0 mm and 2.5 mm). Qualities desired in the material are insensitive to moisture and reproducibility of firmness values over a 6-12 month period.

Results: A calibration standard was requested which would be reproducible over a 6-12 month period. Currently, calibration standards are available which are reproducible for a three month period.

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II. PRESENTATIONS, MEMOS AND REPORTS

A. Project Meeting

Along with Ms. Barbara Joyner, delivered a formal presentation of the Agema Thermovision 870 system emphasizing its capability, efficiency and versatility.

B. Information Update to R&D Management

Presented the Agema Thermovision 870 system to the upper management of R&D.

C. Memos

1. Memo to R. A. Thesing, "Calibration Update," July 24.
2. Memo to R. A. Thesing, "Evaluation of New Silicone Material," August 9.
3. Memo to D. Snead, "Firmness Study Over Time," August 14.
4. Memo to N. Ryan, "Air Drying Technique for Carbon Analysis," September 8.
5. Memo to R. A. Thesing, "Marlboro and Winston: Smoking Parameters," September 14.
6. Memo to R. A. Thesing, "Status of Calibration of Firmness Instrument," September 28.
7. Memo to R. A. Thesing, "Collaborative Firmness Study," October 10.
8. Memo to J. P. Mussini, "Firmness/Silicone Gauges," October 20.
9. Memo to R. A. Thesing, "Status of Firmness Calibration," November 7.
10. Memo to Dr. J. Lewis, B. Mait and R. Thesing, "Training (RS/1)," December 15.
11. Memo to K. Hughes and D. Snead, "Collaborative Firmness Study," December 15.

III. CAREER DEVELOPMENT

A. Continuing Education

Successfully completed the four credit course, Instrumental Methods of Analysis, at Virginia Commonwealth University. This class is part of the requirements for the masters program.

B. Saturday Seminars

Successfully completed the seminar title "How to Manage your Career" at the University of Richmond.

C. Cross-training

Objective: To be introduced to the three areas of CTSD, understand their operation, and be able to perform their functions.

Status: Successfully completed training in all areas of CTSD; Cigarette Information (Barbara Mait), Analytical Chemistry (Jane Lewis), and Cigarette & Tobacco Properties (Richard Thesing). In addition to CTSD, training was successfully completed in Semiworks (Doug Albertson).

D. Industry Monitor

Participated in the production, on-line testing, and canning of Industry Monitor #13.

DPL:rad

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PHILIP MORRIS U. S. A.

INTER - OFFICE CORRESPONDENCE

Richmond, Virginia

To: . Mr. Richard A. Thesing
From: . Nancy R. Ryan
Subject: . Accomplishments for 1989

Date: January 15, 1990

I. PUBLICATIONS

A. Video Lab Procedures

Objective: Liaison between Training Center and Laboratories. Coordinate schedules, personnel, shooting, viewing tapes and manuscripts. Edit/revise procedures as needed.

Results: The video for the oven volatiles procedure was completed during the third quarter. This completes the fourth video of laboratory procedures.

B. Pictorial Diary

Objective: Photograph all new brands and package changes. Update annually the pictorial diaries distributed throughout R&D and New York Office.

Results: Photos of all new brands and package changes were added to the twenty pictorial diaries which are distributed throughout R&D and the New York Office. Completed first quarter.

Target: First Quarter - Completed

C. Annual Investigation of Reconstituted Tobacco

Objective: Investigate each major manufacturer's reconstituted tobacco annually. Prepare written report.

- A. Microscopic
- B. Physical
- C. Chemical

Results: Reconstituted tobaccos from Philip Morris and competitor's brands was microscopically examined for material content and type of process. Brown & Williamson was the only manufacturer that made a change in their reconstituted tobacco since these materials were examined in 1988.

Brown & Williamson uses three types of reconstituted tobacco. Two are made by the papermaking process and the third is an

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"RCB type" cast sheet. This "RCB type" sheet material is mixed in a 50/50 ratio with the "RL type" sheet in only Viceroy 85 and 100 cigarettes. The "RCB type" sheet contains diamonium phosphate (DAP) as indicated by the levels of soluble ammonia (0.69%), phosphorus (2.10%) and the high total alkaloid content.

Target: Fourth Quarter - Completed

D. Microscopic Blend Data for C.I. Report

Objective: Microscopically separate cigarette blends from Philip Morris and competitor's products quarterly. Review these data and enter them into the Automated Blend Component Data Acquisition System to be reported in the C.I. Report semiannually.

Results: The C.I. cigarette brands were analyzed microscopically for percent reconstituted tobacco, percent expanded stems, and percent expanded tobacco. The values were entered into the C.I. database and were updated twice annually in the C.I. Report.

Target: Quarterly

E. Microscopic Examination of R. J. Reynolds Cigarette Papers

R. J. Reynolds changed the cigarette paper on their branded generic and generic cigarettes during the first quarter, 1989. This new paper contains approximately 50% wood pulp (hardwood and softwood), with the balance being flax and shive fibers. The cigarette papers previously used on these products contained 100% flax and shive fibers. The brand families affected by this change are: Doral, Century and the generic brand Best Buy.

Magna Lights 85 and Magna 80 (Box) have also changed from a 100% flax and shive paper to a paper which contains trace amounts of esparto grass and trace amounts of softwood fibers with the balance being flax and shive fibers. This change occurred during the second quarter, 1989.

All other Reynolds brands use a 100% flax and shive cigarette paper.

II. SPECIAL INVESTIGATIONS AND METHODS DEVELOPMENT

- A. Extruded tobacco filaments in RJR's Best Value generic products
- B. Menthol cigarette filter holder - Japan
- C. RJR's Premier Smokeless product
- D. Microscopic examination of RJR cigarette papers
- E. Cigarette papers on Marlboro cigarettes worldwide

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III. SUPPORT TO R&D AND INTERNATIONAL SERVICES

Objective: Provide effective and timely support to other areas of R&D and the Manufacturing Center. Routine analyses were performed during this period which included the following:

- A. Microscopic Blend Separation/Solvent Floatation
- B. Marlboro Standardization Project
- C. In-house Submitters Request
- D. Photographs of new brands and package changes
- E. Denier per filament measurements
- F. Cuts/inch measurements of cigarette filler
- G. Ventilation types and rows
- H. Carbon Analysis
- I. Coal Removal Analysis
- J. Cigarette Paper Fiber Analysis
- K. Reconstituted Tobacco Studies

Target: Continuous

IV. MICROSCOPY LABORATORY

Objective: Schedule work, prioritize workload, write performance appraisals and keep abreast of changes in Philip Morris and competitor's blends.

Results:

- A. Laboratory Staff increased from one technician to two technicians.
- B. Scheduled vacations, kept accurate personnel files and gave performance appraisals.
- C. Have insured accurate and timeliness data going out of the lab.

V. ACTION COST TEAM REPRESENTATIVE FOR CTSD

Objective: Represent CTSD in cost savings ideas. Submit written ideas to company representative.

Results: The Cigarette Testing Services Division personnel submitted five (5) cost savings suggestions during 1989. The R&D goal was \$225,000; the final cost savings figure for 1989 was \$238,000.

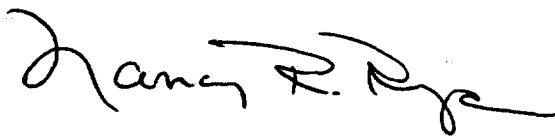
Target: Continuous

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VI. MEMOS

- 1 - Accomplishments for 1988 (1/89)
- 2 - Monthly Progress Reports (1/89 to 12/89)
- 3 - Microscopic Examination of Reconstituted Tobacco from Japan (4/89)
- 4 - Marlboro Cigarette Papers (4/89)
- 5 - Microscopic Examination of Cigarette Papers (6/89)
- 6 - Microscopic Examination of Cigarette Papers for Spain (6/89)
- 7 - Microscopic Examination of Cigarette Papers (8/89)
- 8 - Microscopic Examination of R.J. Reynolds Cigarette Papers (8/89)
- 9 - Winston cigarette Blends (9/89)
- 10 - Microscopic Examination of L&M Cigarettes (10/89)
- 11 - Brown & Williamson - Reconstituted Tobacco (10/89)
- 12 - Microscopic Examination (10/89)
- 13 - Microscopic Examination of Cambridge Full Flavor Cigarette Papers (10/89)
- 14 - Microscopic Examination of Cigarette Papers (11/89)
- 15 - Plans and Objectives - 1990 (12/89)

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PHILIP MORRIS U. S. A.

INTER - OFFICE CORRESPONDENCE

Richmond, Virginia

To: . Mr. Richard A. Thesing

Date: January 15, 1990

From: . Dolly Snead

Subject: . Accomplishments for 1989

I. SUPERVISION/LABORATORY MANAGEMENT

Objective: To perform required supervisory functions for the laboratory employees in accordance with PM policies, such as personnel management, scheduling and prioritizing work, and writing performance appraisals.

To insure that proper training is given to all personnel and that current procedures are maintained to provide requestors with accurate and timely data.

Results:

- A. Kept accurate personnel files, scheduled vacations, gave performance appraisals, and counseled my staff of technicians as needed.
- B. Have kept personnel informed on priorities and have allocated resources to expedite the workload and maintain a good turnaround time.
- C. Laboratory staff changed from five technicians to four technicians in 1989.
- D. A total of 95,715 samples were analyzed in the laboratory in 1989.

II. LABORATORY OPERATIONS

Objective: To monitor and maintain laboratory instrumentation and conditions.

Results:

- A. Learned the procedure for checking and adjusting the airflow in the ovens using an Alnor Velometer.
- B. Initiated use of silicone blocks and a displacement gauge to help establish a calibration standard for the three firmness instruments.

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- C. Began using statistical control charts as a means to monitor laboratory conditions.

III. INDUSTRY MONITOR

Objective: To prepare laboratory #4282 to accommodate the Industry Monitor.

Results: Test instruments and equipment were removed from the lab to provide space for equilibration of the monitor. Approximately 850 cigarette magazines were stored on special shelving which was fabricated to accommodate the cigarettes for the equilibration period. Laboratory conditions were closely monitored with wet bulb/dry bulb psychrometers, and circulating fans were installed to maintain uniform airflow within the laboratory. Necessary instruments were temporarily set up in other laboratories to maintain workflow of priority samples during this period of approximately eight weeks.

IV. SPECIAL STUDIES

Objective: To provide support for comparative and collaborative studies.

Results:

- A. Completed an evaluation of the firmness instruments using five different cigarette brands and testing at various relative humidity levels.
- B. Participated in a firmness collaborative study with Pierre Soquel of FTR. The testing was conducted on cigarettes from Switzerland at two condition levels (FTC and ISO).
- C. Additionally, Jean-Pierre Mussini and Marcel Hugenin of FTR were in Richmond to test a strain gauge calibrator for the firmness instruments. At that time, firmness testing was conducted on two cigarette brands at two condition levels (FTC and ISO) and on two firmness instruments (R&D and FTR).

V. SAFETY/HOUSEKEEPING

Objective: To know and practice the safety and housekeeping procedures at R&D.

Results:

- A. Laboratory personnel have attended all required safety training sessions.
- B. Supervisor has kept lab personnel informed and trained in safety procedures.

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VI. MEMOS

1. Monthly Progress Reports
2. Memo to Richard A. Thesing, "Industry Monitor", dated June 19, 1989.
3. Memo to Richard A. Thesing, "Plans and Objectives for 1990," dated December 14, 1989.

VII. CAREER DEVELOPMENT

1. RS/1 Training
2. "Managing Cultural Diversity" workshop
3. "The Challenge of Measuring Humidity" seminar

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PHILIP MORRIS U. S. A.

INTER - OFFICE CORRESPONDENCE

Richmond, Virginia

To: . Mr. Richard A. Thesing
From: . Deborah R. Watson
Subject: . Accomplishments for 1989

Date: January 12, 1990

I. PHYSICAL TESTING LABORATORY

Objective: To function as a Project Leader, having the responsibilities which include scheduling work, prioritizing workload, and writing performance appraisals.

To offer leadership in providing requestors with accurate data in a timely manner. To monitor and maintain laboratory equipment and conditions. And to provide comparative testing and evaluation of products between all Philip Morris laboratories throughout the world.

Results:

- A. Completed a comparative evaluation of the second PPM100 Coresta permeability instrument.
- B. Discontinued Greiner porosity analysis May 1.
- C. Completed collaborative studies of physical cigarette parameters with Costa Rica and Guatemala.
- D. Trained three new technicians on all physical testing instruments. Laboratory staff was decreased from five to four technicians.
- E. 890,953 physical testing analyses were performed 1989 compared to 929,026 analyses performed in 1988. In May, the cylinder volume analysis was transferred to the Materials Evaluation Laboratory. In October, the coal removal analysis was transferred to the Microscopy Laboratory.
- F. Monitored R. J. Reynolds brands to determine tobacco weight changes in their brands on a monthly basis.

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II. SPECIAL INVESTIGATIONS AND METHODS DEVELOPMENT

A. New Instrument Evaluation

Objective: To evaluate commercially available instruments, develop testing procedures and analyze new methods of cigarette testing in order to increase test efficiency, improve accuracy or replace obsolete instrumentation.

Results: The re-engineered (prototype) cylinder volume instrument, manufactured by Borgwaldt, was being evaluated by the Standards Laboratory of Quality Engineering. A comparison study between the existing instrument and the prototype instrument using Marlboro filler was performed by the Physical Testing Laboratory. The study showed the results were comparable.

B. Analytical Methods

Objective: To write analytical procedures for instruments used in the Physical Testing Laboratory.

Results:

1. Coresta Permeability Method - new
2. Cylinder Volume - revised

C. Laboratory Conditions Evaluation

Objective: To observe that the Physical Testing Laboratory conditions are maintained at $75^{\circ}\text{F} \pm 1^{\circ}$ and 60% relative humidity $\pm 2\%$. To provide statistical process control charts for this data on a monthly basis.

Results: In February, the plenum trays were washed and all filters were changed. The airflows were monitored and adjusted. Several more airflow adjustments have been made during the year by Building Administration. Monthly statistical process control charts were generated.

III. LABORATORY AUTOMATION

A. Physical Testing Laboratory Robotic Test Station

Objective: To provide support to the Development Engineering Division during design and assembly of the robotic test station. This support included development involvement, understanding of robotic capabilities and knowledge of instrumentation. The robot will be capable of testing cigarette circumference, total resistance-to-draw, filter resistance-to-draw, ventilation, cigarette length and filter length. This test station will be able to handle 85% of the various samples tested.

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Results: The robotic test station was delivered in November. The system was debugged and fine tuned. Comparative studies will follow.

IV. CONSOLIDATED REPORT

Objective: To collect domestic brand samples for cigarette firmness, cylinder volume, coal removal and ventilation characteristics analyses. To evaluate data and summarize these data in an annual report.

To train the supervisor of the Materials Evaluation Laboratory to assume the cigarette firmness and cylinder volume responsibilities for this project, and to train the supervisor of the Microscopy Laboratory to assume the coal removal and ventilation characteristics responsibilities for this project. These responsibilities include collection of samples, data evaluation, updating of RS1 files and summation of results.

Results: Collection of samples were submitted for cigarette firmness, cylinder volume, coal removal and ventilation characteristics analyses on a monthly basis. All brands are tested once a quarter. This year, however, R. J. Reynolds brands were tested more frequently to determine any changes in these parameters due to the decrease in tobacco weight in most of their brands.

Training of personnel assuming responsibilities for this project began during the last quarter of 1989, and will continue into 1990.

V. PUBLICATIONS, MEMOS AND PRESENTATIONS

Memo to Mr. J. E. Wickham, "Conversion of Cigarette Paper Permeability Analysis (Greiner to Coresta)," December 21, 1988.

Memo to Ms. Joyce F. Stargardt, "Plans & Objectives for 1989," dated December 21, 1988.

Memo to Ms. Joyce F. Stargardt, "Accomplishments for 1988," January 13.

Presented the "Highlights of the Consolidated Report" in Project Review, March 28.

Published the annual "Physical Parameters of Domestic Cigarette Brands: Coal Removal, Cylinder Volume, Cigarette Firmness, Sieve Fractions and Ventilation Characteristics," report, dated March 28.

Presented status of projects in Quarterly Review, April 13.

Presented the "Highlights of the Consolidated Report" to Mr. Charlie Horner's staff, April 25.

Memo to Rich Thesing, "Industry Monitor - Summary of Physical Testing Results," June 19.

Memo to Mr. J. E. Wickham, "Update on Changes of R. J. Reynolds' Brands," July 5.

Presented status of projects in Program Review, July 11.

Memo to Mr. J. E. Wickham, "Update on R. J. Reynolds' Brands," August 14.

Memo to Mr. J. E. Wickham, "Five Year History of Marlboro and Winston," August 31.

Present status of projects in Program Review, October 12.

Memo to Mr. J. E. Wickham, "Physical Parameters Comparison Study - Domestic Lark Products vs. Export Lark Products for Japan," October 24.

Memo to Mr. J. E. Wickham, "Update on R. J. Reynolds' Brands," December 14.

Memo to Mr. Richard A. Thesing, "Plans & Objectives for 1990," December 14.

VI. CAREER DEVELOPMENT

Statistical Process Control Course

Managing Cultural Diversity Seminar

Measuring Humidity Seminar

Machine Vision Technology Seminar

Tobacco Chemists' Research Conference

Time:Text Priority Management Course

DRW:rad

Deborah R. Watson

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